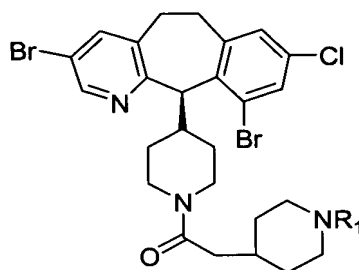


What is claimed.

1. An enantioselective process of preparing a compound represented by formula **VI**

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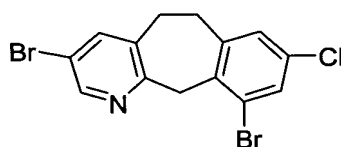


**VI**

wherein  $R_1$  is H or a protecting group;

which comprises contacting a compound represented by formula **V**

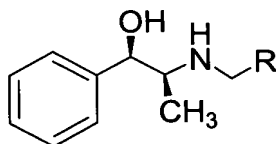
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**V**

in an inert organic solvent with at least about an equivalent amount of each of:

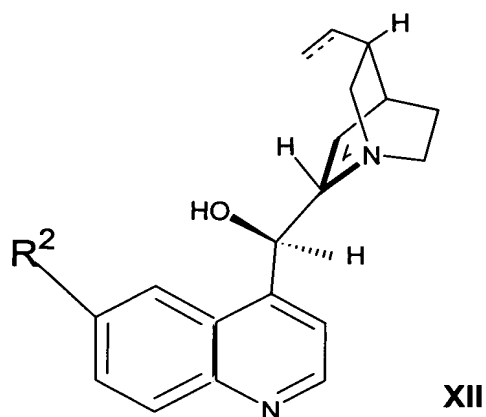
- (i) a chiral amino alcohol represented by the formula **XI**



**XI**

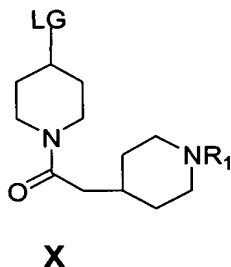
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wherein R is an aryl, alkylaryl, alkoxyaryl, arylaryl, heteroaryl, or polycyclic aryl group, or formula **XII**



wherein in formula **XII**, the dotted line represents an optional second bond and wherein  $R^2$  is selected from alkoxy, alkoxyalkoxy, aryloxy, arylalkoxy, and  $NR^A R^B$ , wherein  $R^A$  and  $R^B$  are independently alkyl or aryl, and  $R^2$  is optionally substituted by one or more alkoxy groups;

(ii) a compound represented by formula **X**



wherein LG is a leaving group and  $R_1$  is H or a protecting group; and

(iii) an organic ether or amine additive or mixtures thereof to form a reaction mixture;

then adding to the reaction mixture at least an equivalent amount of a non-nucleophilic strong base in an organic solvent and optionally adding an equivalent amount of water or a  $C_1 - C_3$  alcohol to produce the compound represented by formula **VI**.

2. The process of claim 1 wherein the non-nucleophilic strong base is a lithium base selected from lithium diisopropyl amide, lithium N-butyl-N-phenyl amide, lithium bis(trimethylsilyl)amide, and lithium N-ethyl,N- phenyl amide.

5 3. The process of claim 1 wherein the organic ether or amine additive is an alkyl ether, an alkylamine, an arylamine or mixtures thereof .

4. The process of claim 1 wherein the organic ether or amine additive is 2-isopropylamine, tetramethylethylenediamine ("TMEDA") or N-ethylaniline, N-phenyl, N-benzylamine or N-phenyl, 1-or 2-naphthyl amine or mixtures thereof  
10

5. The process of claim 1 wherein the reaction is conducted under an inert atmosphere.

15 6. The process of claim 1 wherein water is added to the reaction mixture comprising compound **V**, the chiral amino alcohol, compound **X**, the organic additive, and the non-nucleophilic strong base.

7. The process of claim 1 which further comprises adding about 0.5 to about 1.2 equivalents of water the reaction mixture comprising about 0.7 to about 1.2  
20 equivalents of each of compound **V**, about 1.0 to about 2.5 equivalents of the chiral amino alcohol, compound **X**, about 1.0 to about 3.0 equivalents of the organic additive, and about 0.9 to about 1.1 equivalents of the non-nucleophilic strong base.

25 8. The process of claim 7 which further comprises adding about 1.8 to about 2.4 additional equivalents of the non-nucleophilic strong base , in two approximately equal portions, to the resulting reaction mixture formed by the adding water.

30 9. The process of claim 1 wherein the chiral amino alcohol is quinine or a quinine derivative of formula **XII**.

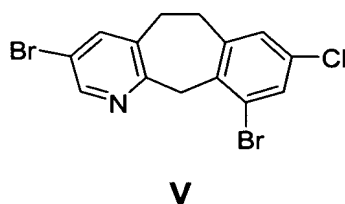
10. The process of claim 1 which further comprises treating the compound of formula **VI** wherein  $R_1$  is a protecting group with sufficient aqueous acid to produce a reaction mixture comprising the compound of formula **VI** wherein  $R_1$  is H, and adding to the reaction mixture at least about an equivalent of a chiral organic acid to form an acid addition salt, and then isolating the acid addition salt and then contacting the resulting isolated acid addition salt with sufficient base in a solvent to form the compound of formula **VI** wherein  $R_1$  is H

11. The process of claim 10 wherein the chiral organic acid is N- $\alpha$ -(tert-butoxycarbonyl)-L-asparagine, di-p-toluoyl-L-tartaric acid, N-(tert-butoxycarbonyl)-L-proline, (S)-(-)-2-hydroxy-3,3-dimethylbutyric acid, N-acetyl-L-phenylalanine or (1R)-(+)-camphanic acid.

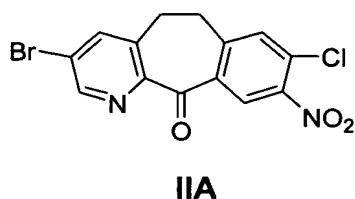
12. The process of claim 1 wherein the chiral amino alcohol is quinine.

13. The process of claim 1 wherein in compound **X**, LG is mesylate, and  $R_1$  is t-butoxycarbonyl.

14. A process for the preparation of a compound represented by formula **V**

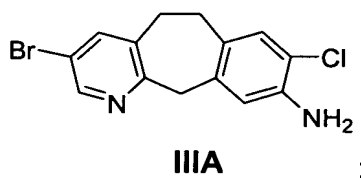


which comprises (1) contacting a compound represented by formula **IIA**

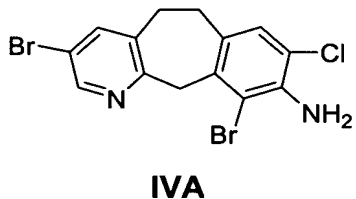


with at least about an equivalent amount of phosphorous acid in the presence of catalytic amount of an alkali iodide or iodine and hydrobromic acid in water to form a reaction mixture, and then adding to the reaction mixture at least about an equivalent of hypophosphorous acid to form a compound represented by formula

5 **IIIA**



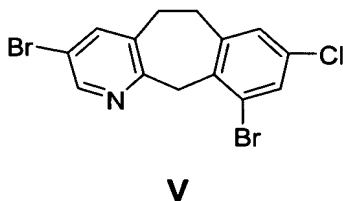
- 10 (2) contacting the resulting compound represented by formula **IIIA** with at least about an equivalent amount of bromine in the presence of an organic acid and a lower alkanol to form a compound represented by formula **IVA**



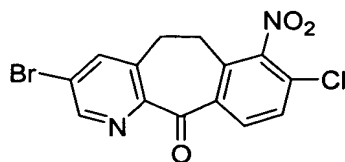
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15. The process of claim 14 which further comprises the step of contracting the compound represented by formula **IVA** with at least about equivalent amount of hypophosphorous acid and the presence of sodium nitrite in a aqueous acidic medium to form the compound represented by formula **V**

20

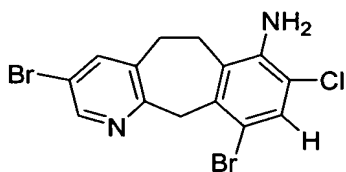


16. The process of claim 14 wherein a mixture a compound of **IIA** and a compound represented by formula **IIB**:

**IIB**

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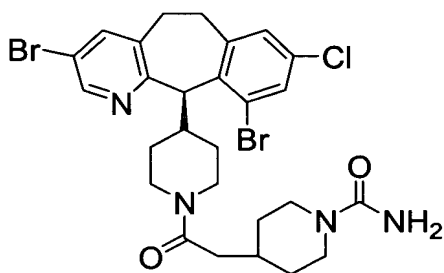
is present in the contacting step (1) and a compound represented by formula **IVB**

**IVB**

is also formed in step (2)

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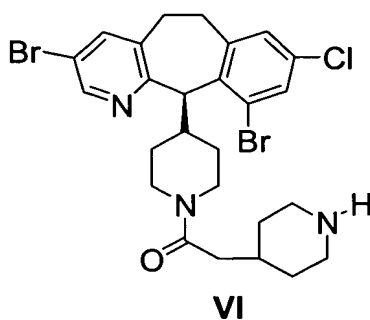
17. A process for the preparation of a compound represented by formula **I**

**I**

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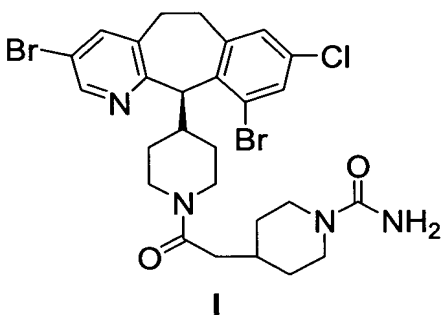
which comprises contacting a compound represented by the formula **VI**

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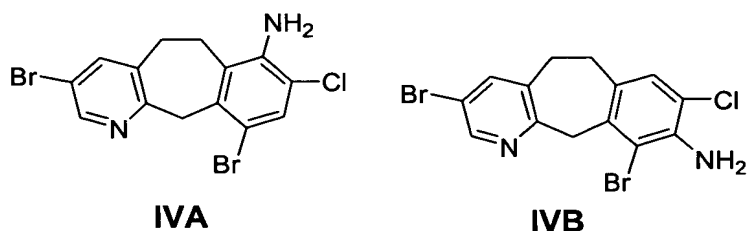


with an effective amount of sodium cyanate (NaOCN) , and an effective amount of sodium carbonate (Na<sub>2</sub>CO<sub>3</sub>) in a water miscible organic solvent comprising an effective amount of water to form the compound represented by the formula I.

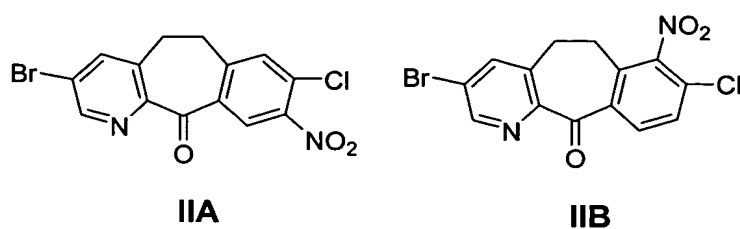
18. The process of claim 17 which further comprises contacting the compound represented by the formula I produced in claim 17 with a solvent mixture comprising tetrahydrofuran, ethyl acetate and water for a time sufficient to produce the compound represented by the formula I, in a substantially chemically form.



19. A process of preparing compounds represented by formulas **IVA** and **IVB**



15 which comprises contacting compounds represented by formulas **IIA** and **IIB**



- 5 with at least about an equivalent amount of phosphorous acid in the presence of at least a catalytic amount of sodium iodide, hydrobromic acid, in water to form a reaction mixture and adding to the so-formed reaction mixture at least about an equivalent amount of hypophosphorous acid, and continuing the contacting for a time sufficient to form a reaction mixture comprising the compounds represented
- 10 by formulas **IIIA** and **IIIB**, and contacting the resulting reaction mixture with at least about an equivalent of bromine in the presence of an organic acid and a lower alkanol to form a compound represented by formula form a mixture comprising the compounds represented by formulas **IVA** and **IVB**.